

Software and Sociology in UK Astronomy

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Accepted for publication in Astronomy & Geophysics.

Abstract

I discuss the remit of Starlink’s software strategy groups and a particular item on the agenda of a meeting of the image processing software strategy group held on 26th January 2001: ‘Why don’t people use Starlink software?’. The answer to this question was speculated to be primarily a sociological effect: those people supervising UK astronomy Ph.D. students are largely people who had learnt their trade at a time when Starlink had a less than perfect reputation. I report on the recommendations made to Starlink to counter this effect.

Introduction

In the United Kingdom, the Starlink Project (see <http://www.starlink.rl.ac.uk>) has provided interactive data processing facilities for astronomers for over 18 years. Starlink has provided both hardware and software on behalf of PPARC; ‘the primary purpose ... [being] ... to maximize the return on PPARC’s expenditure on astronomical computing’ (<http://www.starlink.rl.ac.uk>). In 1999, Starlink’s budget stood at approximately 2.5 million pounds sterling per annum. Out of this sum, approximately 0.6 million pounds is ear-marked for the provision of software. These provisions include the development, distribution and documentation of the software.

The Starlink software collection is a set of software written both by members of the Starlink Project and imported from outside the Project for the use of the UK astronomical community. Many utilities and packages exist, mostly focussing on data reduction but there are also some (limited) theoretical tools.

Software Strategy Groups

A mainstay of Starlink’s software development is the existence of Software Strategy Groups (SSGs). There are six such SSGs whose remit covers different aspects of astronomical research: spectroscopy, image processing¹, information services & databases, radio, mm, & sub-mm astronomy, theory & infrastructure and X-ray astronomy. The SSGs were set up after the 1991/1992 review of Starlink to provide feedback, re-assess software priorities and identify future objectives. Membership of the SSGs is composed of both Starlink’s programmers and expert users drawn from across a broad

¹The Author of this article has been a member of the Image Processing SSG since 1999.

spectrum of personal experience and opinion. The SSGs are annually asked to advise on strategies to be adopted over in the coming years in order to ‘satisfy (and continue to satisfy) the needs identified by users in the [Starlink Users] questionnaire. ... They will also be asked to identify in more detail those software projects that should be carried out over the next year in order to implement the strategy’ (<http://star-www.rl.ac.uk/star/docs/sgp44.htx/node3.html>).

Sociological Issues

Third on the agenda of the image processing SSG for 26th January 2001 was the loaded question ‘Why don’t people use Starlink software?’ This question came as a surprise for a few members of the SSG as many of the users used Starlink’s software on a daily basis in the research.

Starlink software, however, is by no means the only available source of software for astronomers. The major competition for users is the successful Image Reduction and Analysis Facility (IRAF). IRAF is a publicly available ‘general purpose software system for the reduction and analysis of scientific data’ (<http://star-www.rl.ac.uk/iraf/web/faq/FAQsec01.html>)². IRAF overlaps many of the areas that the Starlink software does (e.g. general purpose image reduction software). One may expect that there would be substantial competition for users between the two, however, this is not the case. UK astronomers have *tended* in the past to migrate towards using the IRAF option in preference to Starlink’s software. Contributory factors to this may be that in many observatories (e.g. the Isaac Newton Group) IRAF has historically been much more readily available than Starlink and UK astronomers have used IRAF to be more compatible with their American collaborators. So why do many UK astronomers use IRAF when much of the equivalent Starlink software is arguably better, more stable and more reliable? In answering this question, the image processing SSG expediently pointed out that this was not always the case. During the 1980’s, Starlink software had a less than perfect reputation. But why in 2001 is there still such a trend for astronomers to be preferentially using IRAF packages over Starlink ones? The image processing SSG speculated that the major reason was a sociological one. Post-graduate students who are presently commencing work on their Ph.D. theses will primarily be introduced to the tools of their trade by their Ph.D. supervisors. Their supervisors, on the whole, in turn learnt their trade during, or lived through the aforementioned time when Starlink had a less than perfect reputation. Their supervisors prejudices and perspectives naturally influence their students: in guiding their post-graduate students they are likely to recommend IRAF in preference to Starlink software to their charges. Thus, Starlink software has become less used over time, potentially creating a further problem: a lack of local expert users. Even if new post-graduate students chose to use Starlink software, they would probably have little to no personal guidance available to them whereas if they were to chose IRAF, many people within the given astronomy department would potentially be able to assist.

²IRAF written and supported by the IRAF programming group at the National Optical Astronomy Observatories (NOAO) in Tucson, Arizona.

Discussion

To remedy this situation, the image processing SSG has recommended a number of changes be implemented. Firstly, to give the software a higher visibility, the Starlink newsletter would be re-introduced to publicize new software developments. More ideas were to implement a method for disseminating what software is available on-line; the introduction of a ‘man’ page; and an education scheme to provide novice and infrequent users reach rapid decisions about what Starlink software could be helpful. Although these recommendations are a start, it is probably going to take some time to wash away the memories of the imperfect reputation that Starlink had in the 1980s and counter the present sociological prejudice against Starlink software. In the immediate future, many new software products will be released. Of particular note is the Interactive Data Language (IDL). The recent rise and increasing use of IDL has shown that quality, new software will always have a place within the astronomical community and Starlink must re-double its efforts to compete.

Acknowledgements

I sincerely acknowledge the data analysis facilities provided by the Starlink Project which is run by CCLRC on behalf of PPARC, without which my Ph.D. would not be what it is. I thank Peter Draper and Nigel Metcalfe for useful discussions on the factual content of this article and the image processing SSG that inspired this.